

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Docket No.: KEHRMANN-4

In re Application of:

ALEXANDER KEHRMANN

Int. Appl. No.: PCT/EP2004/014092

Int. Filing Date: December 10, 2004

For: HYDRAULIC BINDER AND A CHROMATE
REDUCER AND USE THEREOF

FIRST PRELIMINARY AMENDMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

S I R:

Preliminary to the first Official Action in the above-entitled application, please amend the application as follows.

The Commissioner is hereby also authorized to charge any fees which may be required during the pendency of this application, including any patent application processing fees under 37 C.F.R. 1.17, and any filing fees under 37 C.F.R. 1.16, including presentation of extra claims, or credit any overpayment to Deposit Account No: 06-0502.

Please amend the above-entitled application as follows:

AMENDMENTS TO THE SPECIFICATION WITH MARKINGS TO SHOW CHANGES MADE

Before paragraph [0001], add the heading --BACKGROUND OF THE INVENTION--.

Before paragraph [0006], add the heading --SUMMARY OF THE INVENTION--.

Amend the following paragraphs:

[0007] -- ~~The part of the object relating to the~~ According to one aspect of the invention, a hydraulic binder is attained by claim 1. The chromate reducer according to the invention is set forth in claim 15. The use of the chromate reducer according to the invention is referred to in claim 19 includes cement as main constituent, to which a mixture of a chromate reducer and a carrier material is added, wherein the chromate reducer contains two iron(II) sulfate components, with the first component made of filter salt from the titanium dioxide production, and with the second component being green salt, and a mineral acid regulator which is added to the chromate reducer.--.

[0010] --According to ~~claim 2~~ another feature of the invention, a chromate reducer is used containing two iron(II) sulfate components. The ~~[[1st]]~~ first component is made of filter salt from the titanium dioxide production to which a mineral acid regulator is added. The ~~[[2nd]]~~ second component is green salt.--.

[0011] --A preferred example of a mineral acid regulator includes ground limestone~~[[,]]~~ ~~as set forth in claim 3~~. It is added to the filter salt at an amount between 3 weight-% and 18 weight-%, in particular between 5 weight-% and 15 weight-% ~~[[(claim 4)]]~~. The ground limestone should hereby have a particle size of 0 mm to 2 mm.--.

[0012] --According to ~~the features of claim 5~~ another feature of the invention, the ~~[[1st]] first~~ iron(II) sulfate component and the ~~[[2nd]] second~~ iron(II) sulfate component are mixed at a ratio of 1:1 to 1:5. In addition, an inert carrier material is added.--.

[0013] -- A free-flowing product is produced as a result of mixing the ~~[[1st]] first~~ iron(II) sulfate component and the ~~[[2nd]] second~~ iron(II) sulfate component and the carrier material. The carrier material assumes within the mixture the drying function and the function of a moisture buffer or regulator. Drying and buffer effects of the carrier material ensure optimal adjustment of the mixture. Oxidation with atmospheric oxygen is avoided as is also agglomeration. There is no need to execute a cumbersome preparation or drying of copperas/filter salt before the latter is processed. Moisture regulation is assumed by the carrier material.--.

[0015] --According to ~~the features of claim 6~~ another feature of the invention, a hydrophobic substance in the form of polymeric alcohols can be added to the mixture of chromate reducer and carrier material. This measure contributes to an increase of storage stability of the hydraulic binder.

[0017] --Advantageously, the polymeric alcohols are made on the basis of plastic or cellulose, especially in granular or liquid form~~[[,]] as set forth in claim 7~~. A hydrophobic substance that has been shown especially effective in practice is a siloxane ~~[[(claim 8)]]~~. In particular a low-viscose poly(methylhydrogen) siloxane with trimethylsilyl end groups is well suited.--.

[0021] --An example of an especially effective carrier material involves silica gel~~[[,]] as set forth in claim 9~~. Silica gel~~[[,]] also called "Kieselgel" in German[[,]]~~ involves a solid amorphous silicic acid, the use of which as adsorbent for gases, vapors, and liquids, is generally known. It can be made with different pore openings.

Silica gel absorbs moisture on its large inner surface which may range up to 800 m²/g.--.

[0022] --Also alumina, in particular activated alumina, can be used as carrier material[[.]] ~~as set forth in claim 10~~. Activated alumina is activated aluminum oxide (Al₂O₃) and involves a natural clay mineral (bentonite) in crumbly form with similar adsorption properties for moisture as silica gel.

[0023] --Practical tests have shown that dry sand at a particle size between 0.1 mm and 0.4 mm affords very good properties as carrier material in the mixture [[[claim 11]]].--.

[0024] ~~--Claim 12 sets forth~~ A further feature of the invention involves another alternative carrier material, involving catalyst powder which has also effective properties as carrier material and involves in particular catalyst powders from Claus processes, i.e. desulphurization processes, especially those in crude oil and natural gas refineries. Those are used as carrier material within the mixture. In this way, a further industrial waste product can be supplied for meaningful further processing. Catalyst powder from Claus processes are characterized by a large inner surface and good moisture adsorption capability.--.

[0025] --The content of carrier material in relation to the amount of chromate reducer ranges between 5 weight-% and 15 weight-%, in particular at about 10 weight-%[[.]] ~~as set forth in claim 13~~. At these contents, the function of the carrier material as moisture buffer or regulator can be reliably realized.--.

[0026] ~~--Finally, claim 14 sets forth that~~ According to another feature of the invention, the mixture of chromate reducer and carrier material is added to the hydraulic binder at an amount between 0.01 weight-% to 5.0 weight-%, in particular between 0.2 weight-% to 1 weight-% in relation to the cement quantity. This results

in an effective reduction of the chromate content to below limit values that are considered health hazards.--.

[0027] --The chromate reducer according to the invention for reduction of water-soluble chromate contents in cement includes a mixture of filter salt from the titanium dioxide production (iron(II) sulfate monohydrate) as well as green salt (iron(II) sulfate heptahydrate) and a mineral acid regulator[[,.]] ~~as set forth in claim 16~~. The components of the chromate reducer can be mixed basically in any random sequence. --.

[0028] --As already stated above, it is within the scope of the invention ~~according to claim 16~~ to use ground limestone as mineral acid regulator. The mineral acid regulator is added to the chromate reducer at an amount between 3 weight-% and 18 weight-%, preferably 5 weight-% to 15 weight-% in relation to the amount of filter salt (iron(II)sulfate monohydrate) [[[claim 17]]]. Practical tests have shown good results, when using a chromate reducer in which filter salt and green salt are mixed at a ratio of 1:1 to 1:5 while mineral acid regulator is added[[,.]] ~~as set forth in claim 18~~--.

After paragraph **[0028]**, add the following:

--BRIEF DESCRIPTION OF THE DRAWING

None

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

None--.

Page 8, after the heading "CLAIMS" and before the first claim add --What is claimed is:--.